

REMARKS

The Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-5 are pending in the present application. Claim 1 is independent. The Examiner is respectfully requested to reconsider the rejections in view of the remarks set forth herein.

Rejection under 35 USC 102

Claims 1-5 are rejected under 35 USC 102(e) as being anticipated by Tsuyuguchi et al., U.S. Patent 6,289,397. This rejection is respectfully traversed.

With regard to claims 1-5, the Examiner points out that Tsuyuguchi teaches a control chip capable of updating data in a non-volatile memory in an optical disk drive, the control chip comprising:

a microprocessor 43/28 for controlling actions of the optical disk drive;

a decoder 42 controlled by the microprocessor and connected to an external buffer memory and a host interface;

a controller 19 controlled by the microprocessor and connected to the decoder for receiving a control signal and data from the optical disk drive;

an extra memory 49/50 connected to the microprocessor for receiving an update program routine or normal data of the microprocessor;

a DMA unit 47 controlled by the microprocessor for reading the data from the external buffer memory; and

a macro unit **(inherent)** controlled by the microprocessor for receiving data output from the DMA unit and writing the data into a non-volatile memory;

wherein, when the control chip updates the data in the non-volatile memory, the extra memory serves as a buffer memory for the update program routine of the microprocessor, and the microprocessor outputs the control signal to the DMA unit and the macro unit, and the data in the buffer memory is written into the non-volatile memory using the macro unit and the DMA unit in a hardware manner. (abstract, cols. 4-11)

According to the specification of the Tsuyuguchi, the disk drive in the Tsuyuguchi patent is a three-and-a-half-inch floppy disk drive (FDD) with USB interface (col. 3, line 66 ~ col. 4, line 1), not is an optical disk drive.

Furthermore, in the Tsuyuguchi patent, each new firmware version is issued **in the form of a flexible magnetic disk** which may be loaded in the disk drive just like an ordinary data disk, only with the disk drive **disconnected** from the computer as far as data transmission is concerned (Abstract). However, in the present invention, the new firmware version is transmitted from the host and the optical disk drive **must be connected** to the host (computer). That is, the optical disk drive must store a new firmware version **in the buffer memory 212** and store an update program routine to be executed by the microprocessor 304 in the extra memory 302. Therefore, the new firmware version is stored in different medias between the Tsuyuguchi patent and the present invention.

Beside, in the Tsuyuguchi patent, the FDD 5 is divided into a data storage section 6 and an interface section 7. Most of the elements pointed out by the Examiner, such as CPU 43, FDD controller 28, input/output circuit 42, firmware 49, updating program 50 and DMAC 47, are

located in the interface section 7. Therefore, these elements are used to execute the interface action, not to execute the data process. However, the elements in the present invention, such as the microprocessor 304, decoder 306, controller 300, extra memory 302, DMA unit 312 and macro unit 310, are located in a control chip to execute the data process or firmware updating.

Next, in the Tsuyuguchi patent, the input/output circuit 42, CPU 43, RAM 45, DMAC 47, EEPROM 44 and FDD controller 28 are all connected to a bus 39. The FDD 5 must be electrically disconnected from the computer 1, at either of the four USB connections depicted in FIG. 1, for upgrading the firmware on the USB interface EEPROM 44. Then the firmware disk 8a may be inserted in the FDD 5, and the power switch 34b turned on. More specifically, inputting the POWER ON signal from the sensor circuit 48, the USB interface CPU 43 will cause the startup and firmware upgrading program to be read from the EEPROM 44 and stored on the RAM 45. Thereafter the FDD 5 will automatically start up, and the firmware rewritten on the EEPROM 44, according to this program. Therefore, the CPU 43 will execute the firmware upgrading program stored on the RAM 45 to execute the update action.

However, in the present invention, the DMA unit 312 is connected to the Microprocessor 304 by a first bus and is connected to the buffer memory 212 by a second bus. Furthermore, the macro unit 310 reads data from the DMA unit 312 directly by a third bus, not by the first bus. Therefore when the macro unit 310 is executing the update action, the microprocessor 304 only needs to monitor the interior state of the macro unit 310. Thus, the microprocessor 304 may execute other actions with the host 216 at other time. Because the macro unit 310 and the DMA unit 312 read and write data by hardware when the macro unit 310 and the DMA unit 312 are

executing the update action of firmware, the executing speed is faster than that by calculating addresses by software.

The difference between Tsuyuguchi patent and present invention are:

1. Tsuyuguchi patent is an **FDD**, but the present invention is an **optical disk driver**.
2. The new firmware version is issued in **the form of a flexible magnetic disk** in the Tsuyuguchi patent. But in the present invention, the new firmware version is stored on the buffer memory 212, which **transmitted from a host**.
3. The update action is executed by the CPU in the Tsuyuguchi patent, but the update action is executed by the Macro unit 310 and the DMA unit 312 in the present invention. The CPU in the present invention is to monitor the interior state of the macro unit 310.
4. In the Tsuyuguchi patent, elements are connected to a common bus 39. But, in the present invention, the DMA unit 312 reads the data from the buffer memory 212 by an extra bus.

Therefore, claims 1-5 should be deemed allowable in front of Tsuyuguchi.

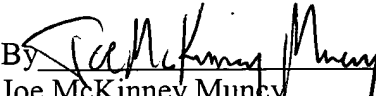
CONCLUSION

All of the stated grounds of objection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone the undersigned at (703) 205-8000.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

By 
Joe McKinney Muncy
Registration No. 32,334
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 gatehouse Rd
Suite 100 East
P. O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant